Amendments to the Claims:

This listing of claims will replace the listing of claims, as filed and as amended in the First Preliminary Amendment, in the application:

Listing of Claims:

Claim 1 (currently amended): An apparatus for dispensing a sample for analysis by electrospray ionisation mass spectrometry, said apparatus comprising a substrate of electrically insulating material, the substrate comprising at least two covered microstructures both having an outlet at ~~the~~ an edge of the substrate where ~~the~~ an electrospray is to be generated by application of a voltage and an inlet for fluid introduction, one of said microstructures containing ~~the~~ a sample solution to be sprayed and at least one other of said microstructures containing a second fluid, ~~preferably~~ a sheath liquid or a sheath gas, ~~characterized in that~~ the sample solution and the second fluid, sheath liquid or sheath gas ~~are~~ being arranged to be directly mixed in ~~the~~ a Taylor cone of the ~~spray~~ electrospray.

Claim 2 (currently amended): An apparatus according to claim 1, wherein said substrate is a multilayer body ~~, preferably of polymer material(s),~~ in which at least two layers of said multilayer body each comprise one of said at least two microstructures.

Claims 3-41 (canceled).

Claim 42 (currently amended): A method of fabricating an apparatus for dispensing a sample for subsequent analysis by mass spectrometry, comprising the steps of taking a substrate of electrically insulating material, fabricating at least two covered microstructures,

both having an outlet at ~~the~~ an edge of the substrate where ~~the~~ a spray is to be generated by application of a voltage and an inlet for fluid introduction, so that the sample and a sheath liquid ~~solutions~~ solution to be sprayed from the microstructures through ~~these~~ the outlets are mixed in ~~the~~ a Taylor cone of the spray.

Claim 43 (currently amended): A method of fabricating an apparatus according to claim 42, comprising the step of taking a substrate which is a multilayer body, fabricating at least one covered ~~microstructures~~ microstructure in a plurality of layers, assembling said plurality of layers and ~~optionally~~ cutting the assembled multilayer body, so as to obtain at least two covered microstructures, both having an outlet at the edge of the substrate where the spray is to be generated by application of a voltage and an inlet for fluid introduction, so that the sample and sheath liquid solutions to be sprayed from the microstructures through ~~these~~ the outlets are mixed in the Taylor cone.

Claims 44-56 (canceled).

Claim 57 (new): An apparatus according to claim 1, wherein said apparatus has a thickness smaller than 500 μm.

Claim 58 (new): An apparatus according to claim 1, further comprising at least one electrically or ionically conductive means for applying a voltage to the sample solution or sheath liquid, said conductive means having a controlled size and location.

Claim 59 (new): An apparatus according to claim 58, wherein said at least one electrically or ionically conductive means is integrated in a wall of one of said microstructures or is in contact with the sample solution or the sheath liquid at the inlet of one of said microstructures.

Claim 60 (new): An apparatus according to claim 1, wherein a distance between the outlet of the sample microstructure and that of the sheath liquid microstructure is smaller than 200 μm.

Claim 61 (new): An apparatus according to claim 60, wherein the sample microstructure and the sheath liquid microstructure are connected at the edge of the substrate, thereby forming a single outlet.

Claim 62 (new): An apparatus according to claim 1, wherein at least one of said sample microstructure and said sheath liquid microstructure communicates with a network of microstructures.

Claim 63 (new): An apparatus according to claim 1, wherein said covered microstructures are sealed by gluing, lamination or pressure application of a polymer foil.

Claim 64 (new): An apparatus according to claim 1, wherein said sample microstructure contains one of a biological material, a chemical material, proteins, enzymes, antibodies, antigens, sugars, oligonucleotides, DNA, cells, and an organic compound, which is filled in said microstructure or which is coated, immobilized or covalently bound to a

surface of said microstructure or to a solid support comprising one of a membrane, gel, sol-gel, and beads, so as to perform one of a biological assay, enzymatic assay, affinity assay, activity assay, immunological assay, cellular assay, chemical assay, solubility test, permeability test, lipophilicity test, enzymatic digestion, chemical digestion, sample derivatisation, electrochemically induced reaction, protonation, tagging using quinones, and redox reaction.

Claim 65 (new): An apparatus according to claim 1, wherein said sample microstructure comprises a separation means, comprising at least one of a chromatography medium, a capillary electrophoresis system, and a solid phase selected from a membrane, beads and a section of a microstructure wall.

Claim 66 (new): An apparatus according to claim 1, wherein said apparatus is supported in a device for precise positioning of at least one of the microstructure outlets in front of a mass spectrometer entrance, for facilitating electrical connections with one or a plurality of power supplies, or for introducing the sample solution or sheath liquid with minimized dead volume.

Claim 67 (new): A method of dispensing a sample for subsequent analysis by electrospray mass spectrometry, comprising the steps of:

utilizing a substrate of electrically insulating material having at least two covered microstructures each with an inlet for fluid introduction and an outlet at an edge of the substrate for generating an electrospray, one of

said microstructures containing a sample solution and at least one other of said microstructures containing a sheath liquid solution;

applying a voltage to the sheath liquid solution to initiate the electrospray; and

imposing another voltage to the sample solution to induce a flow of sample, such that both said sheath liquid and sample solutions are mixed directly in a Taylor cone of the electrospray.

Claim 68 (new): A method according to claim 67, wherein the proportion of sheath liquid solution and sample solution sprayed is controlled by the difference of the voltage applied in the sheath liquid solution and that applied in the sample solution.

Claim 69 (new): A method according to claim 67, further comprising the step of introducing a compound of known concentration in either or both of the sample and sheath liquid solutions.

Claim 70 (new): A method according to claim 69, further comprising the steps of controlling the proportion of sheath liquid solution and sample solution sprayed and performing quantitative mass spectrometry analysis.

Claim 71 (new): A method according to claim 67, further comprising the steps of immobilizing molecules of the sample reversibly on a solid support and releasing said molecules from the solid support into the sample microstructure by a spraying buffer or gradient of different solvents.

Claim 72 (new): A method according to claim 71, wherein a chemical reaction or an affinity reaction occurs in or on said solid support prior to the releasing step.

Claim 73 (new): A method according to claim 67, further comprising the step of filling said sample microstructure with, or immobilizing or covalently binding to the surface of said microstructure or to a solid support provided as one of a membrane, a gel, a solgel, and beads, one of a biological or a chemical compound, proteins, enzymes, antibodies, antigens, sugars, oligonucleotides, DNA, cells, and an organic compound, so as to perform one of a biological assay, an enzymatic assay, an affinity assay, an activity assay, an immunological assay, a cellular assay, a chemical assay, a solubility test, a permeability test, a lipophilicity test, enzymatic or chemical digestion, sample derivatisation, electrochemically induced reactions, protonation, tagging using quinones, and redox reactions, with subsequent analysis by electrospray mass spectrometry.

Claim 74 (new): A method according to claim 42, further comprising the step of integrating electrically or ionically conductive means for applying a voltage to the sample or sheath liquid solution, said conductive means having a controlled size and location.

Claim 75 (new): A method according to claim 74, wherein said conductive means is formed by one of laser photoablation, plasma etching, chemical etching, deposition of an ink, deposition of a conductive polymer, integration of an ion exchange material, metal deposition, and sputtering.

Claim 76 (new): A method according to claim 74, wherein said conductive means is integrated in a cover of the microstructures.

Claim 77 (new): A method according to claim 42, wherein the microstructures are formed by one of laser photoablation, UV-Liga, embossing, injection molding, solvent casting, light or thermal induced polymerization, silicon technology, and superposition of layers with at least one comprising mechanically drilled grooves, hollows or holes.

Claim 78 (new): A method according to claim 42, wherein a plurality of apparatuses are fabricated in the same substrate, thereby creating an array of apparatuses.

Claim 79 (new): A method of performing a chemical or biological assay, comprising the step of using one or an array of apparatuses with detection by electrospray mass spectrometry, each apparatus being a substrate of electrically insulating material, the substrate having at least two covered microstructures each having an inlet for fluid introduction and an outlet at an edge of the substrate where an electrospray is generated by application of a voltage, one of said microstructures containing a sample solution to be sprayed and at least one other of said microstructures containing a second fluid, the sample solution and the second fluid are arranged to be directly mixed in a Taylor cone of the electrospray.

Claim 80 (new): A method according to claim 79, wherein said chemical or biological assay is selected from a group consisting of an enzymatic assay, an affinity assay, an activity assay, an immunological assay, a cellular assay, a solubility test, a permeability test, and a lipophilicity test.